REMARKS

The present application was filed on November 26, 2003 with claims 1-20, all of which remain pending. Claims 1, 18 and 20 are the independent claims.

Claims 1, 18 and 20 are rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement.

Claims 1-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over allegedly admitted prior art in view of U.S. Patent No. 7,149,216 (hereinafter "Cheriton") and a document by J. Lee entitled "Security Overview" (hereinafter "Lee"). To reference the allegedly admitted prior art, the Examiner cites to the publication of the present application, U.S. Patent Application Publication No. 2005/0114655.

In this response, Applicants respectfully traverse the §112 and §103(a) rejections. Applicants respectfully request reconsideration of the application in view of the remarks to follow.

With regard to the §112 rejection, the Examiner argues that the amendment to claims 1, 18 and 20 made by Applicants in the previous response constitutes new matter. Applicants respectfully disagree. The amendment at issue adds a limitation to each of the independent claims reciting that the subtree comprises at least one node that is not a leaf node of the tree representation. The subtree referred to in the added limitation is the common subtree shared by two or more nodes of a given level of the tree representation. FIG. 3B of the drawings shows an example of the recited tree representation. In this example tree representation 320, there are three levels, denoted Level 1, Level 2 and Level 3. As indicated in the specification at page 12, lines 21-22 and 26, Level 1 is a root level of the representation, and Level 3 is the final level of the tree representation and contains leaf nodes, each associated with a particular action. The tree representation 320 includes a common subtree shared by two or more nodes of a given level where the subtree comprises at least one node that is not a leaf node of the tree representation. For example, as clearly indicated in the portion of the specification cited by Applicants in their previous response, the two nodes 322A1 and 322A2, which are two of the nodes of Level 1, share a common subtree 324 that includes at least one node at Level 2 and two leaf nodes at Level 3. Thus, it is readily apparent that the common subtree 324 is a subtree that comprises at least one node that is not a leaf node of the tree representation 320. Accordingly, the rejection under §112, first paragraph, is believed to be entirely without merit and should be withdrawn.

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With regard to the §103(a) rejection, Applicants submit that the Examiner has failed to establish a proper *prima facie* case of obviousness of claims 1-20 in that the cited references, even if assumed to be combinable, fail to teach or suggest all the claim limitations, and in that no cogent motivation has been identified for combining the references or modifying the reference teachings to reach the claimed invention.

Independent claim 1 is directed to a method of generating a representation of an access control list. The method includes the steps of determining a plurality of rules of the access control list, each of at least a subset of the rules having a plurality of fields and a corresponding action, and processing the rules to generate a multi-level tree representation of the access control list, each of one or more of the levels of the tree representation being associated with a corresponding one of the fields. The claim further specifies that at least one level of the tree representation comprises a plurality of nodes, <u>with two or more of the nodes of that level having a common subtree, and the tree representation including only a single copy of that subtree</u>. Moreover, the tree representation is characterizable as a directed graph in which each of the two nodes having the common subtree points to the single copy of the common subtree.

Thus, in the claimed arrangement, a given level of a tree representation of an access control list comprises two or more nodes that have a common subtree, but the representation only includes a single copy of that subtree, with each of the two nodes having the common subtree pointing to the single copy of the common subtree.

The Examiner in formulating the §103(a) rejection acknowledges that the claim limitations relating to the common subtree are not shown in the collective teachings of the allegedly admitted prior art and Cheriton. See the final Office Action at page 4, third full paragraph. However, the Examiner argues that these limitations are shown in the Take-Grant Model on page 12 of Lee. Applicants respectfully disagree, and will demonstrate below that the Lee reference fails to meet the claim limitations relating to the common subtree. It should be understood that the following arguments directed to the Lee reference relative to the common subtree limitations of claim 1 are not attacking the Lee reference alone, but are instead intended to illustrate that the collective teachings of the allegedly admitted prior art, Cheriton and Lee fail to meet the limitations of claim 1.

The Examiner characterizes the Take-Grant Model on page 12 of Lee as disclosing two or more nodes of a level of a tree representation pointing to a single copy of a common subtree. See the final Office Action at pages 4-5, last paragraph beginning on page 4. Applicants respectfully

submit that this is a mischaracterization of Lee. Lee describes the Take-Grant Model as comprising a directed graph version of the access control matrix. In this model, the nodes can be subject or object, and the labels between the nodes can have the values read, write, execute, take or grant. The Examiner argues that the limitation in question is met because "a plurality of nodes 'x & y' at one level point[s] to one node 'z.'" This argument is problematic for a number of reasons. First, the nodes x and y in the model are different subjects of an access control matrix, which is apparent from the fact that subject x can take the rights of subject y. Thus, there is no indication that the two nodes share a common level of a tree representation. Lee does not provide any description whatsoever regarding levels, but instead merely discloses a directed graph with labeled lines between nodes representative of subjects and objects of an access control matrix. Further, the object node z shown in Lee is not a common subtree of a tree representation, as alleged by the Examiner. Instead, as clearly described in Lee, it simply denotes a particular object that can be read (r) or written (w) by both subject x and subject y.

Moreover, as indicated above, Applicants have previously amended independent claim 1 to specify that the recited common subtree comprises at least one node that is not a leaf node of the tree representation. The object node z is clearly a leaf node of the tree representation shown on page 12 of Lee and relied upon by the Examiner.

The Examiner at page 13, Section 6, of the final Office Action further argues the "direct coupling of the nodes to the common node 'z' is a one level implementation" but that page 12 of Lee nonetheless "clearly meets the breadth of the claim language." Applicants note that the claim language expressly recites that the common subtree shared by the two nodes at a given level must include at least one node that is not a leaf node of the representation. In the Lee arrangement, the object node z is clearly a leaf node, and thus the limitations are not met. Moreover, Lee specifically teaches that there are only two types of nodes, namely subject or object nodes, and the node z as an object node will apparently always be a leaf node in the Lee arrangement. The Examiner appears to be reading into the Lee reference teachings that are simply not there.

It is therefore respectfully submitted that the Examiner has mischaracterized the Lee reference in alleging that the Take-Grant Model shown on page 12 of Lee meets the common subtree limitations of claim 1, and thus the collective teachings of the cited references fail to meet each and every limitation of claim 1.

Applicants further note that one skilled in the art would not be motivated to apply the Take-Grant Model of Lee to the M-trie plus data structure of Cheriton because the former is explicitly described as a directed graph version of an access control matrix, where the nodes can be only subjects or objects of the access control matrix. Such a model appears to be incompatible with the M-trie plus data structure as shown in FIG. 2 of Cheriton. This is because the FIG. 2 data structure of Cheriton includes for each of the nodes 205, 210 and 215 an oppointer 220 that includes an address 225 and an opcode 230, which is an arrangement that does not appear to be consistent with the subject-object model of Lee. Accordingly, it is believed that attempting to incorporate the Take-Grant Model of Lee into the M-trie plus data structure of Cheriton would not "optimize the ACL representation by improve [sic] speed further and reduce redundancy." See the final Office Action at page 5, first full paragraph. To the contrary, such a combination would appear to be highly impractical and possibly unworkable.

It is therefore believed that independent claim 1 is not obvious in view of the proposed combination of cited references.
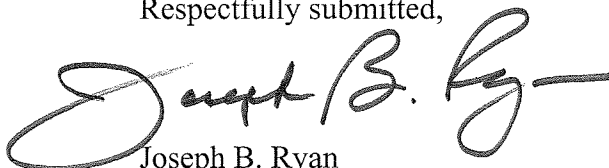
Independent claims 18 and 20 are believed allowable for reasons similar to those identified above with regard to independent claim 1.

Dependent claims 2-17 and 19 are believed allowable for at least the reasons identified above with regard to their respective independent claims.

In view of the above, Applicants believe that claims 1-20 are in condition for allowance, and respectfully request withdrawal of the §103(a) rejection.

As indicated previously, a Notice of Appeal is submitted concurrently herewith.

Respectfully submitted,

Date: March 12, 2008

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Enclosure(s): Notice of Appeal

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